ASSESSMENT OF TANNERY WORKER'S OPINION TOWARDS THEIR WORKPLACE IN NATURE

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ABSTRACT

The objective of this study is to find out the opinion of the tannery workers. The study targeted Delhi national capital region tanneries. As a metropolitan city and the capital, it was the chosen area for the research study. Industrial pollution and its work station environment matters a lot in today's lifestyle, especially in terms of sustainability etc.

In the Delhi national capital region, six tanneries were selected and interacted with the tannery workers and data was collected through questionnaire to understand the workplace opinion among them. The collected data have been tested through the statistical analysis and found that workers' opinions differ according to the different tanneries and their environment. The calculative value determined the statistic test. In this case, $F_{crit}(1,10) = 4.96$ at $\alpha = 0.05$. Since $F=60.8 > 4.96$, the significant results at 5% level. Hence, it is being concluded with strong confidence of the two groups values differ, i.e $H0$ rejected and $H1$ accepted.

KEYWORDS: Tannery, Environment, Sustainability, Workplace & Nature

I. INTRODUCTION

The tannery and the whole system is directly balanced by the human capital. The tanning process can be maintained and processed by the technically trained human being. The well-known technical person can handle the tanning process in a good manner. The quality of tanning providers always has been set by human work group. The competition leads the quality outcome especially in each level of the tanning process. Majorly there are two kinds of tanning processes i.e. veg tanning and chrome tanning. In the earlier period, veg tan was the most preferred method, and later on due to the huge demands etc. along with technical growth, the chrome tan method launched as well. The sustainable tanning method is veg-tan and it is coming up again in the field. The foreign demands also prefer veg tan finishing, especially in the European region. It protects the environmental culture in a better way. Social and business dimensions directly propionate and strengthen the relations of civil community, workers, customers, stakeholders etc.

Tanning developing process leads to producing skin into leather. The leather industry totally depends upon tanning. Without tanning, the raw skin cannot be useful for any product making etc.

The chemical processing is involved from raw skin to leather finishing. Each level of work process directly involves technical human power. The application of large amount of chemicals is required for drum tanning. A small amount of chemicals is required for the pedal tanning process. All these work processes are significantly determined by the 'ph' value positively. The complex and continuous different levels result in finished leather. First

step involves soaking the raw material with dilute hydrochloric acid to smoothen the hair follicle. Second step is to remove the unwanted hairs from the skin. For removing the unwanted hairs, there are two kinds of methods that can be applied i.e. pedal method and shaving method. Once cleared of unwanted hairs, the next step would be dyeing. In this, the color fixing and grain finishing take place. Very large quantity of finishing is done through the drum for uniformity of gran finish. After dyeing leading to draying process. A gentle conveyer process for the conditioning of the leather. "Staking" for softening the leather after the dyeing and drying process. Buffing has also been included if the finish wants to be like nubuck and suede. Finishing of the leather for shining and appealing through ironing etc., and finally measuring and packing into different bundles for the customer.

II. REVIEW OF LITERATURE

Elizabeth Olsen (2009) indicated that the amount of energy put on to finish the leather process to great extent. The production of leather starts from the killing of the animal and tanning process, skin sorting, socking, hair removing, de-pickling, dying, drying and finishing respectively.

Small skins are from dead animals and larger in size are called hide leather. The prevention measures from decomposing with the use of azo dyes and chromium salts. Rinsing with diluted sulphuric acid prevents the leather from decomposing. The bad condition of sting is a horrible part of the tanning.

Bill Bartholomew (2002) described that there are different methods of tanning approaches to finish the leather. Veg-tanning and chemical tanning. Veg-tanning commonly used the traditional way of ingredients like, tree leaves, tree roots, wood, cork, bamboo, turmeric etc. Veg-tanning is plant based and organic related Chemical tanning is the use of chemicals for all steps, from the dying to finishing of the leather. There is a comparatively huge difference between both the tanning process. The hair parts can be utilized for fur and luxury items. All the animal parts are utilized in business ventures and profits.

Bradbrook (2005) mentioned that the consideration of monetary benefits should not equally compromise with the environmental factors. Sustainability has to be considered and pollution avoided. Ensure the sustainability and profit, people and planet must be equally balanced.

Lucus (2003) stated that manpower dealing may be changeable according to the different factors. The manpower and its implementation improve the level of production promptly. It is important to achieve maximum results. Moreover, effective dealing has a valuable part in the business venture.

Michael (2003) elaborated on the sustainable environment. Any such drafting for the human utility purpose and for the future generation. Sustainable activity can be protecting the environment and its nature heritage inherent to ensure social, ecological and health wave line. The European Union has a set of units and policies for environmental protection. Amsterdam treaty also has their own environmental protection team. Health protection is the most important fact of the sustainable environmental protection force.

In 1992, Rio de Janeiro conducted an international level conference to promote the awareness of sustainability along with green environment. There were many rectifications and improvement indications took place. New invention on the scheme of green environment, biological diversity etc. Framework on climate, environment development, sustainable development, forestry, land management etc. As far as industries are concerned, they, especially tanneries, must adopt the

pledge about the sustainable process fundamentally during leather production. The strong commitments urged by the government bodies through the tanneries or industries to ensure as social responsibilities under the long term norms. The leather production must be done in a sustainable, profitable way. The strong and reasonable responsibility towards sustainability work process is always supported directly by the government bodies.

III. METHODOLOGY

To fulfill the objective of this study, the subjects were chosen randomly from Delhi regions. The age group of the subjects was between 18 to 50 years. 200 subjects from each tannery in Delhi. These age groups were sub divided into two categories. First age group 18 to 30 and second age group 31 to 50. So the total subjects were 1200.

By using the questionnaire method to investigate the tannery workers and their workplace nature.

This tabulated and interpreted to draw the conclusion towards the hypothesis of the study.
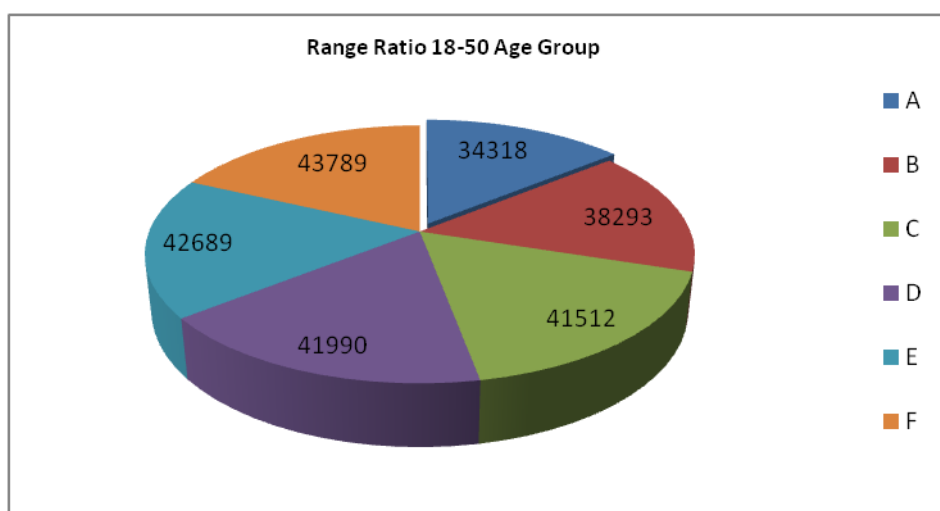

Figure 1: Indicates the 18-50 Age Group Data Ratio Tannery-Wise.

F-Test

While comparing statistical data set F-test suits to test the hypothetical concerns. According to the population the data can be sampled and in order to identify the data set distribution which would under the model of least squares.The model was introduced initially of Sir Ronald A. Fisher, followed by him George W, Snedecor develop the square of t-test model into application model. The corrective and comparing the values by equally distribute through analyzing is the result solution method which is popular in the field of statistical research.The statistical research and its involvement initially and vigorsly involved in the year 1920s only.

In the collection of different data and its sum of squares by arising can be determined by the F-tests in the statistical calculation in terms of proving certain criteria. It is the reflection of two or more scale based sum of squares from the different variables or variable data. The distribution of data under F-tests must be the independent data or variables. And can be scaled chi-squared distribution. The common variance of the data value may be distributed normally for traditional test prove.

The overall F-test calculation and its ratio would be reasonability experimented as per the responses of the factors.

Step 1: Calculate the mean within each group:

$$\overline{Y}_1 = \frac{1}{6}\sum Y_{1i} = \frac{6+8+4+5+3+4}{6} = 5$$
$$\overline{Y}_2 = \frac{1}{6}\sum Y_{2i} = \frac{8+12+9+11+6+8}{6} = 9$$
$$\overline{Y}_3 = \frac{1}{6}\sum Y_{3i} = \frac{13+9+11+8+7+12}{6} = 10$$

Step 2: Calculate the overall mean:

$$\overline{Y} = \frac{\sum_i \overline{Y}_i}{a} = \frac{\overline{Y}_1 + \overline{Y}_2 + \overline{Y}_3}{a} = \frac{5+9+10}{3} = 8$$

where a is the number of groups.

Step 3: Calculate the "between-group" sum of squares:

$$S_B = n(\overline{Y}_1 - \overline{Y})^2 + n(\overline{Y}_2 - \overline{Y})^2 + n(\overline{Y}_3 - \overline{Y})^2$$
$$= 6(5-8)^2 + 6(9-8)^2 + 6(10-8)^2 = 84$$

where n is the number of data values per group.

The between-group degrees of freedom are one less than the number of groups

$$f_b = 3 - 1 = 2$$

so the between-group mean square value is

$$MS_B = 84/2 = 42$$

Step 4: Calculate the "within-group" sum of squares. Begin by centering the data in each group

The within-group degrees of freedom are

$$f_W = a(n-1) = 3(6-1) = 15$$

Thus the within-group mean square value is

$$MS_W = S_W/f_W = 68/15 \approx 4.5$$

Step 5: The *F*-ratio is

$$F = \frac{MS_B}{MS_W} \approx 42/4.5 \approx 9.3$$

The test value can be determined. The F_{cri} (2,15) =3.68 α = 0.05. So F- 9.3> 3.68, it can be counted significant at 5% level and reject the null hypothesis and the value of expected group may differ.

Table 1: "F" Test of ANOVA for Between Groups

	'F' Test of ANOVA			
	"Between-Group"			
	For Age Group 18-30	**Forage group 31-50**		
Tannery	**Y1**	**Y2**	**6(Y1-Y)^2**	**(6Y2-Y)^2**
A	17188	17130	55012704	57140376
B	19448	18845	3538944	11277846
C	20788	20724	1963104	1548384
D	21086	20904	4541400	2840064
E	21375	21314	8059686	7233624
F	21945	21844	17936646	15902304
Total =	121830	120761	91052484	95942598.0

Table 2: "F" Test of ANOVA for Within Group

mean within each group=	20305	20127
overall mean(Y)=	20216	
"between-group" sum of squares(S*B*)=	186995082.0	
between-group degrees of freedom=	2-1=1	
between-group mean square value MS*B*=	186995082.0	

"within-group"						
	For age group 18-30	**For age group 31-50**				
Tannery	**Y1**	**Y2**	**y1**	**y2**	**(y1)^2**	**(y2)^2**
A	17188	17130	-3117	-2997	9715689	8982009
B	19448	18845	-857	-1282	734449	1643524
C	20788	20724	483	597	233289	356409
D	21086	20904	781	777	609961	603729
E	21375	21314	1070	1187	1144900	1408969
F	21945	21844	1640	1717	2689600	2948089
Mean	20305	20127			15127888	15942729.0

within-group sum of squares S*W*=	3.1E+07
The within-group	2(6-1)=10
degrees of freedom=	2(6-1)=10
MS*W*	3107062
The *F*-ratio =	60.18

Hypothesis: There is no different opinion of the workers and dealers in tanneries towards the sustainability in the leather Industry.

H_0: There is no difference from the opinion of the workers and dealers of different age groups & different tanneries.

H_1: As per the survey data there is a different opinion of the workers and dealers according to the different age groups & according to the different tanneries too.

RESULT

The critical value is the number that the test statistic must exceed to reject the test. In this case, $F_{crit}(1,10) = 4.96$ at $\alpha = 0.05$. Since $F=60.8 > 4.96$, the results are significant at the 5% significance level. One would reject the null hypothesis,

concluding that there is strong evidence that the expected values in the two groups differ. i.e H0 rejected and H1 accepted.

The calculative value statistically determined the test study and the $F_{crit}(1,10) = 4.96$ at $\alpha = 0.05$. Since $F=60.8 > 4.96$, mentioned herewith is the actual case. Therefore, the level of significance is 5% and reject the null hypothesis with the confidence of tested values of the two groups. Henceforth, H_0 rejected and H_1 accepted respectively.

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